CONSTRUCTION AND DEMOLITION DEBRIS DISPOSAL SITE GUIDELINES

NOVA SCOTIA

Approval Date: October 24, 1997 **Effective Date:** October 24, 1997

Approved By: Peter Underwood

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I. GENERAL

1. Purpose

(a) The purpose of these guidelines is to provide guidance for the proper environmental management and disposal of construction and demolition debris.

(b) These guidelines also provide guidance as to the requirements to obtain an approval to construct and operate construction and demolition debris disposal sites.

(c) Refer to Schedule "A" for the definition of terms used in these guidelines.

(d) A C&D Debris Disposal Site should be selected, designed, constructed and operated such that it protects the environment during the lifespan of the C&D Debris Disposal Site.

(e) It is the responsibility of any generator of construction and demolition debris to employ the reasonable and practical means, including source reduction, reuse or recycling, in order to divert construction and demolition debris from being disposed of at a Construction and Debris Disposal Site.

(f) Final assessment of applications for the construction and operation of a construction and demolition debris disposal site will be on a case by case basis. For further information respecting these guidelines, contact the Regional/District Office of Nova Scotia Environment and Labour where the site is located.

2. Applicable Documentation

Applicable documentation to which these guidelines apply include, but is not limited to, the following:

(a) *Environment Act*, S.N.S. 1994-95, c.1, Part IX;
(b) Solid Waste-Resource Management Strategy (1995);
(c) *Solid Waste-Resource Management Regulations* ;
(d) *Activities Designation Regulations*;
(e) *Sulphide Bearing Material Disposal Regulations*;
(f) *Approvals Procedure Regulations;*
(g) Pit and Quarry Guidelines (May 1999); and
(h) Contingency Plan Criteria for Releases of Dangerous Goods and Hazardous Materials (March 26,1990).

3. Applicability

(a) These guidelines apply to any land which is intended to be utilized as C&D Debris Disposal Site for the disposal of C&D Debris.

(b) No person shall own, construct, manage, operate, alter or modify a C&D Debris Disposal Site for C&D Debris without obtaining an approval from the Minister.

(c) An Approval is not required for a C&D Debris Disposal Site for the disposal of rock (excluding rock containing a sulphide bearing material), aggregate, soil, bricks, mortar, concrete, asphalt pavement, porcelain or ceramic materials, trees, brush, limbs, stumps, root balls, organic mat, and milled wood that is free of adhesives, coatings or preservatives.

II. APPLICATION FOR APPROVALS

1. Application

(a) Prior to construction and/or operation of a C&D Debris Disposal Site, an approval must be granted by the Department pursuant to Section 31 (2) (b) of the Nova Scotia *Solid Waste-Resource Management Regulations*.

(b) Applications for an Approval to construct and/or operate a C&D Debris Disposal Site must be accompanied by a report documenting the design described in Section III of these guidelines and other supporting documentation as may be requested by the Department.

(c) Unless specifically exempted by the Administrator, the applicant is to provide all information necessary to satisfy the requirements of Section III.

(d) Applications for Approval to construct and/or operate a C&D Debris Disposal Site must be accompanied by a letter from the municipal unit where the C&D Debris Disposal Site is to be located stating that the C&D Debris Disposal Site meets zoning, planning restrictions and such other by-laws as may exist.

III. C&D DEBRIS DISPOSAL SITE DESIGN AND OPERATION

1. Design Requirements

(a) A C&D Debris Disposal Site should incorporate the following features:

.1 minimum of 1 m of soil with a hydraulic conductivity of 1×10^{-5} cm/sec or less between the lowest elevation of any of the waste and the highest elevation of the ground water or bedrock;
.2 a plan for the placement of cover on the debris;
.3 controlled site entry and exit infrastructure;
.4 a drainage plan for surface water including control infrastructure (ie. sedimentation ponds);
.5 appropriately designed road surfaces;
.6 signs which indicate the name of the C&D Debris Disposal Site, hours of operation, emergency contacts and all materials acceptable for disposal at the C&D Debris Disposal Site;
.7 ground water monitoring wells including at least one groundwater monitoring well installed hydraulically above the gradient of the site and at least three monitoring wells installed hydraulically below the gradient direction;
.8 weigh scales;
.9 there should be a separation distance of 30 m from the active disposal area to the nearest property boundary or to the road allocation of any common or public highway;
.10 there should be a separation distance of 30 m from the active disposal area to the nearest bank top or high water mark of any surface water course or water body, including salt water, or to any off-site well; and,
.11 there should be a separation distance of 90 m from the active disposal area to the foundation of the nearest off-site structure used for commercial, industrial, residential or institutional purposes.

(b) The Department may require additional design features including, but not limited to, liner systems, leachate management systems and other control infrastructure. These additional requirements may be based on the volume of material to be disposed of on the C&D Debris Disposal Site, the environmental sensitivity of the area or the nature of the materials to be accepted at the C&D Debris Disposal Site.

2. Operational Requirements

A C&D Debris Disposal Site should incorporate, as a minimum, the following operational requirements:

(a) cover material shall be placed in accordance with the plan for cover placement approved by the Administrator;
(b) the approval holder shall be responsible to ensure that there is direct supervision of the C&D Debris Disposal Site during the hours that the C&D Debris Disposal Site is open and is accepting materials;

(c) all loads must be inspected by the supervisor of the C&D Debris Disposal Site prior to unloading;
(d) the owner/operator of the C&D Debris Disposal Site shall accept only C&D Debris;
(e) no industrial waste shall be accepted at the C&D Debris Disposal Site unless otherwise approved by the Administrator in the terms and conditions of the Approval;
(f) no municipal solid waste is to be accepted at the C&D Debris Disposal Site;
(g) no liquid wastes are to be accepted at the C&D Debris Disposal Site;
(h) the approval holder is responsible for controlling litter at the C&D Debris Disposal Site;
(i) exposed areas are to be stabilized to prevent erosion and sedimentation;
(j) dust, odours and noise must be controlled;
(k) detailed records must be kept which include the generator name, the carrier name and the quantity and types of the materials disposed or stored on the C&D Debris Disposal Site. Records should be maintained on C&D Debris Disposal Site for a minimum of two years and be available for inspection upon request;
(l) the approval holder is to conduct a groundwater and surface water monitoring program at the site (see Appendix "A" for elements included in a typical program);
(m) the approval holder must submit to the Administrator, on an annual basis, the quantities and types of material disposed of at the C&D Debris Disposal Site. If additional recycling components are utilized on C&D Debris Disposal Site, the quantities of these materials must also be reported. The report is to also include the results of the groundwater and surface water monitoring program; and,
(n) the Department may require that privately owned, commercial operated C&D Debris Disposal Sites post financial security when requested by the Department under Section 57 of the Act.

3. Operation and Maintenance Manual

(a) An Operation and Maintenance Manual should be prepared for each C&D Debris Disposal Site which should include the following:

.1 record drawings and specifications of the C&D Debris Disposal Site;
.2 complete description of the operational procedures;
.3 monitoring well logs and surface water monitoring logs, including the location plans showing the monitoring points;
.4 contingency plans to deal with wastes that are not acceptable for disposal;
.5 contingency plans to deal with emergency issues including but not limited to fire, explosions and spills; and
.6 procedure to maintain disposal records including the names of the generator and carrier for the materials.

(b) When an Approval is given, a copy of the Approval, including all terms and conditions of the approval shall be included in the Operation and

Maintenance Manual. The Operation and Maintenance Manual shall be kept on-site at all times and shall be available for inspection.

Date at Halifax, Nova Scotia, this 24th day of October , 1997.

original signed by:
Peter C. Underwood
Deputy Minister
Department of the Environment

Schedule "A"

Definitions:

(a) "Act" means the *Environment Act*, S.N.S. 1994-95, c.1.

(b) "active disposal area" means the areas used for disposal, stockpiles, storage, separation and processing.

(c) "Administrator" means a person appointed pursuant to Section 21 of the Act.

(d) "Approval" means an Approval issued pursuant to Section 31 (2) of the *Solid Waste-Resource Management Regulations*.

(e) "construction and demolition debris" means materials which are normally used in the construction of buildings, structures, roadways, walls and other landscaping material, and includes, but is not limited to, soil, asphalt, brick, mortar, drywall, plaster, cellulose, fibreglass fibres, gyproc, lumber, wood, asphalt shingles and metals (hereafter referred to as "C&D Debris).

(f) "construction and demolition debris disposal site" means a site used for the permanent disposal of C&D Debris (hereafter referred to as a "C&D Debris Disposal Site").

(g) "Department" means Nova Scotia Environment and Labour.

(h) "Inspector" means a person appointed pursuant to Section 21 of the Act.

(I) "industrial waste" means garbage, refuse, sludge, rubbish, tailings, debris, litter and other discarded materials resulting from industrial or commercial activities requiring approval under Division V of the *Activities Designation Regulations*.

(j) "lifespan" means the period of time in which a facility is in active operation plus any subsequent period whereby effects monitoring is required.

(k) "municipal solid waste" means garbage, refuse, sludge, rubbish, tailings, debris, litter and other discarded materials resulting from residential, commercial, institutional and industrial activities which are commonly accepted at a municipal solid waste management facility, but excludes industrial waste from an industrial activity regulated by an approval issued under the Act.

APPENDIX 1

TYPICAL SURFACE AND GROUNDWATER MONITORING PROGRAM

1.0 SITE ASSESSMENT AND DESIGN

1.1 Hydrogeologic Assessment

Prior to the establishment or expansion of a site, a report shall be prepared by the owner containing plans, specifications, and descriptions of the hydrogeologic conditions of the site, adjacent and nearby properties, and the regional area in which the site is located, including at a minimum, the following;

.1 a general description of the regional geologic and hydrogeologic conditions occurring within 5 km of the site. This description should identify any unstable soils or bedrock, indicate the location and nature of any boundaries to groundwater movement, and characterize the significance of groundwater resources and the use made of these resources;

.2 a description of local hydrogeologic conditions occurring at the site, and adjacent and other properties within 500 m of the site, and the description shall indicate how local conditions relate to regional conditions;

.3 a detailed hydrogeologic investigation of the site which establishes soil, rock, and groundwater conditions;

.4 an interpretation of the results of the detailed hydrogeologic investigation of the site, including plans, specifications, and descriptions:

.5 an assessment of the suitability of the site for water disposal purposes considering the regional, local, and site specific hydrogeologic conditions, the design of the site, and the contingency plans for the control of leachate and landfill gas.

1.2 Surface Water Assessment

Prior to the establishment or expansion of a site, a report shall be prepared by the owner containing plans, specifications, and descriptions of the surface water conditions of the site, adjacent and nearby properties, and the regional area in which the site is located, including, at a minimum, the following:

.1 a general description of the surface water features occurring within 5 km of the site that is based on the contributing/receiving drainage area, catchment, subwatershed or watershed that is sufficiently large to assess the range and extent of potential effects. This description will include, but not be limited to, flood plains, natural watercourses, drainage paths and boundaries, streamflows, surface water quality, and sources of water

supply;

.2 a description of the local surface water features occurring at the site, and adjacent and other properties within 500 m of the site, and the description shall include how local feature relate to regional features;

.3 a detailed surface water investigation of the site to assess water quality, quantity, and habitat conditions of the surface water features identified on site;

.4 an interpretation of the results of the detailed surface water investigation of the site, including plans, specifications, and descriptions;

.5 an assessment of the suitability of the site for waste disposal purposes considering the regional, local, and site specific surface water conditions, the design of the site, and the contingency plan for the control of leachate.

2.0 OPERATION AND MONITORING

2.1 Groundwater Monitoring

A program for monitoring groundwater quality and quantity shall be carried out by the owner and shall include, at a minimum, the following:

.1 representative samples of groundwater within the site shall be:

a) obtained annually from groundwater monitoring facilities and be analyzed for the parameters listed in column 1 of Schedule 1; and

b) obtained quarterly from groundwater monitoring facilities and be analyzed for the parameters listed in column 2 of Schedule 1;

.2 where requested by property owners or occupants, representative samples of groundwater shall be obtained from domestic wells located within 500 m of the site at a frequency of 1 sample per well per year and these groundwater samples shall be analyzed for the parameters listed in column 2 of Schedule 1;

.3 the results of analysis of a water sample collected under Subsection 2.1.2 shall be provided to the Department and the owner or occupant of the property with the domestic well from which the sample was obtained, within 60 days of obtaining the sample;

.4 the results of analysis of all water samples collected in the groundwater monitoring program, together with an assessment of these results shall be provided to the Department in an annual report, and where the assessment indicates a significant increase in contaminant concentrations, within 60 days of obtaining the sample and 5 days of making the assessment;

.5 the parameters to be monitored may be amended where the owner prepares a report showing alternative parameters should be monitored, based on the type of waste to be deposited at the site.

2.2 Surface Water Monitoring

A program for monitoring surface water quality, quantity, and biological features shall be carried out by the owner and shall include, at a minimum, the following:

.1 representative samples of surface water being discharged from the site and of any waterbody, including upstream control locations, which may be affected by leachate, stormwater runoff, or sediment from the site , shall be:

a) obtained semi-annually, and be analyzed for the parameters listed in column 3 of Schedule 1 and for other parameters of concern identified in the surface water assessment;

b) obtained quarterly and be analyzed for the parameters listed in column 4 of Schedule 1;

.2 annual monitoring of biological features to assess the composition and any changes to the benthic community present in any waterbody, located downstream of storm water discharges, that may be affected by leachate, stormwater runoff, or sediment from the site;

.3 the results and assessment of the results of the surface water monitoring shall be provided to the Department in an annual report, and where the assessment indicates an increase in contaminant concentrations exceeding the natural variability exhibited by baseline and operational monitoring data, within 60 days of obtaining the sample and 5 days of making the assessment;

.4 the parameter to be monitored may be amended where the owner prepares a report showing alternative parameters should be monitored, based on the type of waste to be deposited at the site.

Schedule 1
Groundwater, Leachate and Surface Water Monitoring Parameters

Parameter				
Parameter Group	Column 1	Column 2	Column 3	Column 4
	Comprehensive List for Groundwater and Leachate	Indicator List for Groundwater and Leachate	Comprehensive List for Surface Water	Indicator List for Surface Water
Inorganics				
	Alkalinity	Alkalinity	Alkalinity	Alkalinity
	Ammonia		Ammonia	Ammonia
	Arsenic		Arsenic	
	Barium		Barium	
	Boron		Boron	
	Cadmium	Cadmium	Cadmium	
	Calcium	Calcium		
	Chloride	Chloride	Chloride	Chloride
	Chromium		Chromium	
	Conductivity	Conductivity	Conductivity	Conductivity
	Copper		Copper	
	Iron	Iron	Iron	
	Lead	Lead	Lead	
	Magnesium	Magnesium		
	Manganese			
	Mercury		Mercury	
	Nitrate	Nitrate	Nitrate	Nitrate

Parameter				
Parameter Group	Column 1	Column 2	Column 3	Column 4
	Comprehensive List for Groundwater and Leachate	Indicator List for Groundwater and Leachate	Comprehensive List for Surface Water	Indicator List for Surface Water
	Nitrite		Nitrite	Nitrite
	Total Kjeldahl Nitrogen		Total Kjeldahl Nitrogen	Total Kjeldahl Nitrogen
	pH	pH	pH	pH
	Total Phosphorus		Total Phosphorus	Total Phosphorus
	Potassium	Potassium		
	Sodium	Sodium		
	Suspended Solids	Suspended Solids	Suspended Solids	Suspended Solids
	Total Dissolved Solids	Total Dissolved Solids	Total Dissolved Solids	Total Dissolved Solids
	Sulphate	Sulphate	Sulphate	Sulphate
	Zinc		Zinc	
Volatile Organics				
	Benzene			
	1, 4 Dichlorobenzene			
	Dichloromethane		Dichloromethane	
	Toluene		Toluene	
	Vinyl Chloride			

Parameter				
Parameter Group	Column 1	Column 2	Column 3	Column 4
	Comprehensive List for Groundwater and Leachate	Indicator List for Groundwater and Leachate	Comprehensive List for Surface Water	Indicator List for Surface Water
Other Organics				
			Biochemical Oxygen Demand (BOD_5)	Biochemical Oxygen Demand (BOD_5)
	Chemical Oxygen Demand	Chemical Oxygen Demand	Chemical Oxygen Demand	Chemical Oxygen Demand
	Dissolved Organic Carbon	Dissolved Organic Carbon	Total Organic Carbon	
	Phenol		Phenol	Phenol
Field Parameters				
			Temperature	Temperature
	pH	pH	pH	pH
	Conductivity	Conductivity	Conductivity	Conductivity
			Dissolved Oxygen	Dissolved Oxygen
			Flow	Flow